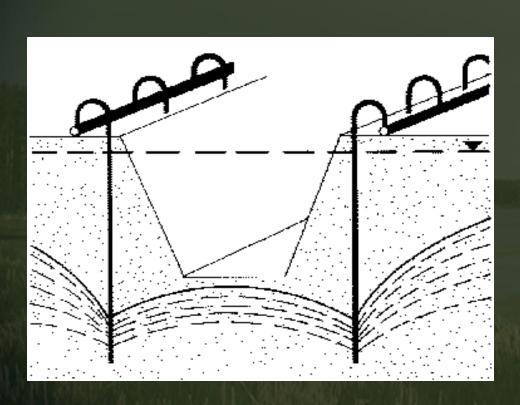
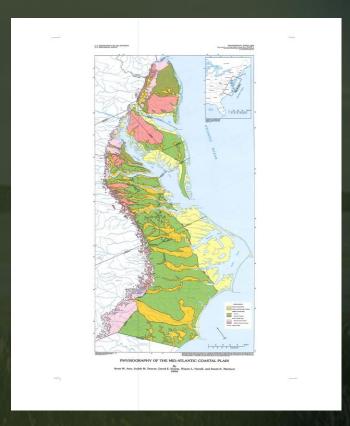


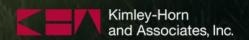


Where is it an issue?







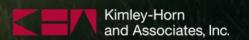


Traditional Approach







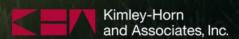


Why Was it A Concern in Virginia Beach?

- Virginia Beach is an MS-4 Locality
- Previous problems with surface water quality violations and permit compliance
- Commitment to VDEQ to comply with all permit requirements
- Leadership within the City understood the importance of handling environmental concerns correctly
- Public Works & Utility PMs personally responsible
- PM with strong background in contaminant assessment







Laskin Gateway – A Dewatering Challenge

- Shallow groundwater table
- Deep utility work
- Old commercial district
- Known contamination
- Large dewatering volume
- Adjacent waterway under a TMDL
- Tight construction schedule
- Limited space for equipment
- High degree of public scrutiny







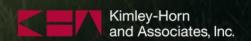
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Groundwater and Soil Investigation



- Corridor Hazardous Materials Recon Survey
 - Historical records review
 - Interviews, questionnaires
- Identified numerous gas stations, dry cleaning facilities and LUSTs
- Conducted selected soil and groundwater testing to confirm
- Localized the general nature of contamination in ROW









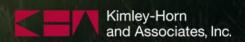
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Dewatering Challenges

- Detected high levels of contamination two weeks before construction
- Both Public Works and Public Utilities involved
- Needed permits and treatment system fast in order to prevent construction delays!
- No pump test data available to provide estimated volume of discharge
- Limited space for mobilization
- No contingency in project funding to address environmental concerns





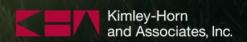
Now What? – Fast Track Permitting!

- Permitting strategy two track approach
 - HRSD Industrial Wastewater Permit
 - VPDES General Permit for Dewatering
 Discharge
- Excellent response from both HRSD and VDEQ
- Permits secured in 10 days!









HRSD Wastewater Permit

- Effluent limitations for Toxic Organics, MTBE, Metals and TSS
- Weekly grab samples
- Effluent metering limited to 300 gpm flow rate limit per discharge station based on pipe size of receiving sewer
- Monthly reporting of daily readings
- Solids separation before discharge
- Charged for treatment



Certified Mail/Return Receipt 7008 1300 0001 6918 548. Mr. Gary Jones P.E., Engineering Manager

City of Virginia Beach Municipal Center - Building 2 2405 Courrhouse Drivi Virginia Beach, VA 23456

Williamshine

Re: Laskin Gateway Improvements Dewatering Project

The following revision to the sanitary sewer discharge approval requirements forwarded electronically on September 14, 2009, is submitted in response to the meeting of September 22, 2009, attended by staff from the City of Virginia Beach, Kimley-Horn, and HRSD. HRSD will accept discharge associated with the enoundwater dewatering activities at the City of Virginia Beach, Laskin Gateway Improvements Dewatering Project, under the following

- Solids separation (baffled frac tank) devices shall be utilized at all times at both groundwater dewatering sites generating sanitary sewer discharge from parcels SB-1, SB-4, SB-11, and SB-12. Also, any dewatering via "Mud Flogs" shall also require
- Weekly grab samples shall be collected and analyzed for Toxic Organics, including Methyl-tert-Butyl Ether (MTBE) and Total Suspended Solids (TSS) at each of the two discharge sites; all sampling and analysis shall be performed in accordance with the methods specified in 40 CFR Part 136; composite samples may be obtained in lieu of grab samples providing that the composite samples are collected, composited, and analyzed in accordance with the approved analytical method(s). All discharge analysis must be identified by parcel (SB-1, SB-4, etc.)
- All required analytical results must be recieved in this office within 96 hours of the sample date; analytical results can either be emailed to p3data@hrsd.com und mnox@hrsd.com, or sent via facsimile to (757) 464-3985.
- The two effluent meters must be dedicated to samtary sewer discharges for the length of the project and be accessible to HRSD staff at all times
- Monthly summaries of the daily discharge volumes from the two effluent meters must be received in this office by the tenth of the following month in which the discharges occurred. Hithurn volumes must also include the parcel number in which the groundwater originated (SB 1, SB 4, etc.).
- Wastewater shall be discharged at a consistent flow rate and the combined total effluent flow from the two discharge sites into URSD's Arctic Avenue nume station shall not exceed 300 gpm (150 gpm per discharge site)

PROVIDING WASTEWATER SERVICES TO PROTECT AND ENHANCE OUR ENVIRONMENT





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VPDES General Permit (VAG 830349)



COMMONWEALTH of VIRGINIA

DEPARTMENT OF FEW PHONOMENT AL QUALITY TUDES AT ER GEODAL OFFICE 5036 Southers Boolevan's Vis., in 6 also J. Vignam 22462 (177) V 8 2000; Fax (575; 518 2103 Vignam 494) B. 199

SEP 2 5 2008

Designation Designation

Personal Character States

General Permit No.: VAG836349 Efficient Date: February 26, 2008 Expiration Date: February 25, 2013

GENERAL VPDES FERMELFOR DISCHARGES FROM PREFROLSOM CONTAMINATED SITES, GROUNDWATER REMEDIATION, AND HYDROSTATIC TESTS

AUTHORIZATION TO DISCHARGE INDESTILL VIRGINIA POLLUTANT DISCHARGE ELIMINATION SYSTEMPERMIT PROGRAM AND THE VIRGINIA STATE WATER CONTROL.

In compliance with the georkious of the Clean Water Act, so monded, the Soste Witter Central Law and equilations adopted pursuant thereto, the money is authorized to discharge to surface waters at the locations internal fail the acception supermiss softeness within the houndaries of the Commonwood of Virginia, except to designated public worker supplies or waters specifically named in other location regulations or policies which prohibits which specialises.

The numberhood discharge shall be in accordance with this cover page, Part I - Lifthoot Limitations and Monitoring Requirements and Part II - Conditions Applicable to All VPDES Pennits, as set forth herein.

If there is any conflict between the requirements of a Department of Revironmental Quality approved cleanup alon and this permit, the requirements of this permit shall govern.

Effluent limitations

- BTEX & MTBE
- pH
- Total Recoverable Lead
- Ethylene Dibromide
- 1,2 Dicholoroethane
- Ethanol
- Chlorinated hydrocarbon solvents
- Monthly sampling and DMRs
- O&M Manual for treatment systems
- No volume limit
- Likely pre-treatment required











Treatment System Configuration

- 20K gal Fractank
- Dual High pressure bag filters
- Shallow tray air stripper
- In line meter
- Mounted on a skid
- Discharge to storm sewer



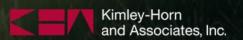




Project Costs

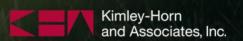
- Discharge from September 09 to March 11.
- 40.3 millions gallons discharged
- HRSD treatment fees: \$157K
- Treatment equipment rental: \$182K
- Total pumping and treatment costs to date: 1.4 cents/gallon





Lessons Learned

- Know when you may encounter contaminated groundwater
- Start environmental investigations early
- Have required permits in hand prior to the start of construction
- Budget for treatment systems
- Develop bid specs and line items from bid sheets reflecting all of the treatment equipment anticipated.

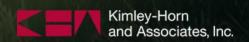


Public Utilities Dewatering Manual

Two categories of discharge urgency

- Emergency:
 - Completion within 30 days
 - Streamline approach for environmental assessment through worksheets
 - GIS applications to quickly locate impacted sites
- Planned Construction:
 - Not scheduled to commence for at least 30 days
 - More traditional Environmental Site Assessments





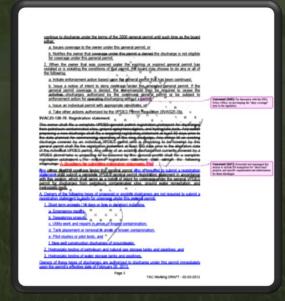
Renewal of VPDES General Permit

Technical Advisory Committee

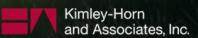
Tasked with updating the VPDES General Permit to reflect emerging issues

Need for short term discharges identified and an efficient approach

being developed



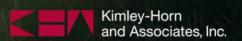




Benefits

- Procedure protects the Contractor and Municipality from NOVs under the CWA
- Avoids fines and adverse publicity
- Gives clear direction to the contractor
- Avoids change orders based on dealing with contaminants
- Reduces the risk of construction delays
- Protects our waterways!





For More Information.....

- Contact: Michelle Wharton, Kimley-Horn & Associates
- 757.355.6673
- michelle.wharton@kimley-horn.com
- HRSD 757.460.2261
- VDEQ (Tidewater Office) 757.518.2000



